

CLAIMS

We claim:

1. A targeting construct comprising:
 - 5 (a) a first polynucleotide sequence homologous to an ubiquitin ligase E3 gene;
 - (b) a second polynucleotide sequence homologous to the ubiquitin ligase E3 gene;
 - and
 - (c) a selectable marker.
2. The targeting construct of claim 1, wherein the targeting construct further
10 comprises a screening marker.
3. A method of producing a targeting construct, the method comprising:
 - 15 (a) providing a first polynucleotide sequence homologous to an ubiquitin ligase E3 gene;
 - (b) providing a second polynucleotide sequence homologous to the ubiquitin ligase E3;
 - (c) providing a selectable marker; and
 - (d) inserting the first sequence, second sequence, and selectable marker into a vector, to produce the targeting construct.
4. A method of producing a targeting construct, the method comprising:
 - 20 (a) providing a polynucleotide comprising a first sequence homologous to a first region of an ubiquitin ligase E3 gene and a second sequence homologous to a second region of an ubiquitin ligase E3 gene;
 - (b) inserting a positive selection marker in between the first and second sequences to form the targeting construct.
- 25 5. A cell comprising a disruption in an ubiquitin ligase E3 gene.
6. The cell of claim 5, wherein the cell is a murine cell.
7. The cell of claim 6, wherein the murine cell is an embryonic stem cell.
8. A non-human transgenic animal comprising a disruption in an ubiquitin ligase E3 gene.
- 30 9. A cell derived from the non-human transgenic animal of claim 8.

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15. The method of claim 13 or claim 14, wherein the cell is derived from the non-human transgenic animal of claim 8.
16. An agent identified by the method of claim 11, claim 12, claim 13, or claim 14.
17. A transgenic mouse comprising a disruption in an ubiquitin ligase E3 gene, wherein
5 the transgenic mouse exhibits at least one of the following phenotypes: embryonic lethality; arrested development; and small, abnormal or reabsorbing egg cylinders.
18. The transgenic mouse of claim 17, wherein development is arrested at embryonic day 8.5.
19. The transgenic mouse of claim 17, wherein homozygous offspring are undetectable
10 after embryonic day E8.5.
20. The transgenic mouse of claim 17, wherein the egg cylinders fail to develop somites.
21. The transgenic mouse of claim 17, wherein the wherein the egg cylinders are reabsorbed by embryonic day 8.5.
- 15 22. The transgenic mouse of claim 21, wherein the abnormal egg cylinders at embryonic day 7.5 resemble normal embryonic day 8.5 egg cylinders.
23. A method of producing a transgenic mouse comprising a disruption in an ubiquitin ligase E3 gene, wherein the transgenic mouse exhibits at least one of the following phenotypes: embryonic lethality; arrested development; and small, abnormal or
20 reabsorbing egg cylinders,
the method comprising:
- (a) introducing an ubiquitin ligase E3 gene targeting construct into a cell;
- (b) introducing the cell into a blastocyst;
- (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said
25 pseudopregnant mouse gives birth to a chimeric mouse; and
- (d) breeding the chimeric mouse to produce the transgenic mouse comprising a disruption in an ubiquitin ligase E3 gene.
24. A cell derived from the transgenic mouse of claim 17 or claim 23.
25. A method of identifying an agent that ameliorates a phenotype associated with a
30 disruption in an ubiquitin ligase E3 gene, the method comprising:

- (a) administering an agent to a transgenic mouse comprising a disruption in an ubiquitin ligase E3 gene; and
- (b) determining whether the agent ameliorates at least one of the following phenotypes: embryonic lethality; arrested development; and small, abnormal or reabsorbing egg cylinders.
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26. A method of identifying an agent that modulates ubiquitin ligase E3 expression, the method comprising:
- (a) administering an agent to the transgenic mouse comprising a disruption in an ubiquitin ligase E3 gene; and
- 10 (b) determining whether the agent modulates ubiquitin ligase E3 expression in the transgenic mouse, wherein the agent has an effect on at least one of the following phenotypes: embryonic lethality; arrested development; and small, abnormal or reabsorbing egg cylinders.
27. A method of identifying an agent that modulates ubiquitin ligase E3 gene function, the method comprising:
- 15 (a) providing a cell comprising a disruption in an ubiquitin ligase E3 gene;
- (b) contacting the cell with an agent; and
- (c) determining whether the agent modulates ubiquitin ligase E3 gene function, wherein the agent modulates a phenotype associated with a disruption in an ubiquitin ligase E3 gene.
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28. The method of claim 27, wherein the phenotype comprises at least one of the following: embryonic lethality; arrested development; and small, abnormal or reabsorbing egg cylinders.
29. An agent identified by the method of claim 25, claim 26, claim, or claim 27.
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